Developing a Compliance Measurement and Management Strategy for Connecticut's General Permit Program
Final Report

With grant funding provided by EPA, the Department objectively assessed industry compliance with a number of its general permits. As part of its analysis, the Department determined a baseline compliance rate, identified root causes of non-compliance with the most significant terms and conditions of the general permits, and developed and employed compliance assistance and enforcement strategies designed to raise compliance rates.

The first project focused on the General Permit for the Discharge of Minor Tumbling or Cleaning of Parts Wastewater ("tumbling general permit"). The tumbling general permit requires registrants to monitor for certain pollution parameters at a particular frequency, maintain the analytical results at the facility and make them available to the Commissioner immediately upon request. Of the 159 tumbling and cleaning general permit registrants, sixteen companies failed to conduct monitoring and four of those companies failed to respond to the Commissioner's request for the monitoring data. Less extensive non-compliance was evident at 83 additional companies. A total of 40 companies that had registered for the general permit were no longer discharging minor tumbling or cleaning of parts wastewaters.

All facilities covered under the tumbling or cleaning wastewater general permit were provided compliance assistance materials. The Department took enforcement action against the sixteen non-compliant companies. Fifteen registrants signed administrative consent orders with penalties totaling nearly $103,000. The Department referred the sixteenth company to the Office of the Attorney General for the filing of a civil action.

In December 2001, the Department provided registrants a reminder of the requirements of the general permit, including a laminated fact sheet summarizing those requirements. At that time, the Department made the registrants aware of its intentions to request the monitoring again.

In January 2003, a second request was sent for monitoring data to 75 registrants. Requests for data were not sent to the sixteen registrants that received enforcement actions as discussed above (the enforcement actions included provisions for the submittal of monitoring data) or to the eleven registrants that were in compliance with the terms and conditions of the general permit in the first round of requests. The Department also learned that many facilities registered to discharge wastewater under the general permit no longer had discharges, shipped wastewaters off-site, or were covered under an individual permit.

The 2003 submittals were forwarded to ERG for data analysis, including a comparison to the 2000 data. All areas evaluated showed an increase in compliance rate as summarized in the following table.

Compliance Area	Percent of Facilities in Compliance 2000	Percent of Facilities in Compliance 2003
Monitoring Frequency	17%	56%
Measuring Every Pollutant	92%	95%
Measuring Flow	10%	36%
Sampling Every Pollutant at the Correct Frequency	19%	47%
Effluent Limitations	36%	54%

The goal of increasing compliance rates with the tumbling general permit was accomplished; however, overall compliance fell short of Department expectations. That overall compliance rates are unacceptable begs the question of whether or not the general permit program, as it is currently structured, is an effective means to assure compliance. The Department will need to consider changes to its general permit program to assure more significant rates of compliance. Some of the changes to consider include:

- Requiring third party certifications on an annual or biennial basis
- Exempting insignificant discharges from permitting requirements
- To the extent they exist, identifying and removing unnecessary and overly burdensome general permit requirements
- Simplifying general permit requirements and instructions

Phase II of the project focused on the general permit for the Discharge of Minor Printing and Publishing Wastewater ("printing general permit"). The main objective of Phase II was to increase registrations under the printing general permit. At the time this initiative began, the Department had record of less than 60 registrants.

In January 2002, the Department mailed to known unpermitted printers a copy of the general permit, a general permit registration form, printing and publishing environmental fact sheets and a questionnaire to be returned to the Department. Unpermitted dischargers of printing and publishing wastewaters were offered a limited time to register for the printing general permit or to apply for an individual permit, as necessary, without fear of enforcement for not having obtained a permit in a timely manner.

Current Department records indicate 202 registrants under the printing general permit with an additional 15 pending approval. The Department conducted 30 site inspections at printers that failed to register for the printing general permit during the correction period and took enforcement action against sites found to be discharging printing and publishing wastewater without a permit. The results were as follows:

- 16 sites had no discharge
- 4 were out of business
- 5 ship wastewaters off-site
- 2 were already registered for the general permit, but due to name changes were not in Department records

- 2 were issued Notices of Violation (NOV) for discharge without a permit. Both companies complied with the NOVs by registering for the general permit.

The implementation of Phase II deviated somewhat from the original workplan for a number of reasons. The primary reason being that the printer universe was at least three times larger than originally estimated. Based on the anticipated additional time needed to follow-up on the increased number of responses, the state decided to use existing compliance assistance materials instead of developing new materials. The Department developed the questionnaire sent to all known printers and recorded, tracked and followed up on all responses. ERG had very limited involvement in this phase of the project.

In the third phase of the project, ERG conducted audits of facilities registered under the Air Bureau's General Permit to Limit Potential to Emit ("GPLPE"). The audit results reflected high compliance with emission limits and lower compliance with respect to the general permit's record keeping requirements. Record keeping and reporting requirements were carefully assessed, and, where appropriate, made less burdensome in a March 2001 revision to the general permit.

The Department expects the project to accomplish a number of objectives all related to increased compliance with general permits. In Phase I, increased compliance with the monitoring and reporting requirements of the general permit and in Phase II, an increase in the number of facilities registered for the general permit. Phase III resulted in revisions to permit conditions, thus making compliance with the general permit less burdensome while still being protective of the environment.

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Compliance Rate For The Connecticut General Permit For Title V Minor Sources

Prepared For:
State of Connecticut Department of Environmental Protection

Prepared By:
Eastern Research Group, Inc.
110 Hartwell Ave.
Lexington, MA 02421-3136

Project Team

Lou Nadeau, Project Lead and Statistician

John Crenshaw, Task Lead

Brian Palmer, Auditor

Mike Pring, Auditor

Kelly Martin, Project Secretary

Brandin McDonough, Power Point

Our Agenda

- Introduction and Background
- Project Objectives
- Methodology
- Results of the Compliance Audits
- Root Cause Analysis
- Possible Improvements to the Program

Introduction and Background

- 320 facilities submitted annual reports in 1999 under the Title V General Permit for minor sources
- Self-reported compliance rate with the minor source criteria for emissions was 99 percent.
- ERG, Inc. performed an independent audit in May through August, 2001.

Project Objectives:

- Independently estimate a statistically valid compliance rate.
- Identify root cause of non-compliance.
- Develop a consistent approach for auditing minor sources in the future.
- Identify ways to improve compliance and the General Permit program.

Methodology

- Select a sample size of facilities to audit.
- Randomly select and contact the facilities.
- Develop an audit protocol.
- Develop an inspection checklist.
- Perform audits and determine compliance.
- Estimate a statistically valid compliance rate.
- Determine the root cause of non-compliance.

Select a Sample Size of Facilities to Audit

- Selected a sample size that would provide a statistically valid compliance rate.
- Statistical Basis:
  - Confidence level of 90%,
  - Precision of 15%,
  - Power (probability of rejecting a false hypothesis) of 40%
- Sample size target of 22 facilities fit the statistical parameters and budget requirements.

Randomly Select the Facilities

- ERG divided state by zip code into 5 zones, randomly selected 3 zones.
- ERG randomly selected 72 facilities by zip code in pairs from the 3 zones (24 per zone).
- Pairs were selected to minimize travel time and ensure two audits per day.

Contact the Facilities

- All General Permit facilities were sent a letter from CT DEP encouraging their help if contacted.
- ERG sent all 72 facilities a letter stating that they had been selected and encouraging them to participate.
- ERG then called each facility; 21 facilities agreed to be audited (a 29% response rate).

Protecting Facility Confidentiality

- No CT DEP staff knew which facilities had been audited.
- ERG staff pulled permit files in Hartford for each facility to be audited.
- Facilities were identified by code in the audit report presented to CTDEP.

Develop an audit protocol

Driving Question: Did the facility demonstrate compliance with the minor source emission limits?

100 tpy of any pollutant, except HAP, VOC, or NOx

50 tpy of NOx or VOC in serious O_3 non-attainment areas

25 tpy of NOx or VOC in severe O_3 non-attainment areas

10 tpy of any single HAP, or 25 tpy of any combination of HAP

Develop an audit protocol

1. Did the facility include all relevant emission units in the inventory?
   - Review process flow and emission diagrams.
   - Walk through the facility.
   - Check for collocated stationary sources.

Develop an audit protocol

2. Did the facility perform the correct emission calculations and use the best available data?

Hierarchy from permit instructions:

CEM data
Stack test data
Manufacturer's stack test data
Material or mass balance
AP-42 emission factors
A procedure approved by the Commissioner

Develop an audit protocol

3. Did the facility use the right inputs in calculating emissions?

- Any facility changes that affect inputs?
- Are they are using the correct data?
- Are the correct variables being monitored?

Develop an audit protocol

4. Does the facility collect the necessary information to perform the emission calculations?

- Verify how records are collected "on the shop floor."
- Verify how process parameters are monitored, measured, and recorded.
- Verify how add-on control devices are monitored.
- Do the recorded parameter data indicate compliance?

Develop an inspection checklist

Facility Fact Sheet
Pre-visit Telephone Contact Checklist
Opening Conference
Facility Tour – Process Flow, Emissions Control
Records Review
Closing Conference
Compliance Assessment

Perform Audits and Determine Compliance

Audit process has three segments:

- Pre-visit preparation
- On-site visit
- Post visit analysis

Pre-visit preparation

The auditor reviews the permit file:

- Types of processes and emission units,
- Raw materials
- Material outputs and products
- Control devices and parameters
- Complete tables for process parameters and control device parameters
- Identify the data needed to estimate emissions from the facility

On-site Visit

Complete the audit checklist:

- Are the emission sources in the permit application actually found at the facility?
- Have all sources been accounted for in the permit?
- Are all parameters within ranges needed to maintain compliance?
- Are all data needed to estimate emissions being collected and recorded?

Post Visit Analysis

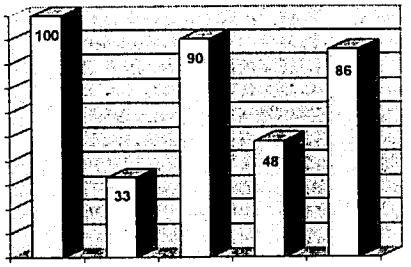
After the on-site visit:

- Review and supplement notes to clarify observations while the are still fresh.
- Calculate emissions using the preferred approach.
- Compare audit estimate with the facility's estimate and records.
- Determine whether the facility was keeping the appropriate records.
- Prepare a final report.

Results of the Compliance Audits

All 21 sources were in compliance with the minor source emission limits (100% compliance).

Compliance rates with the record-keeping requirements in the permit that was in effect at the time were 33% to 90%.



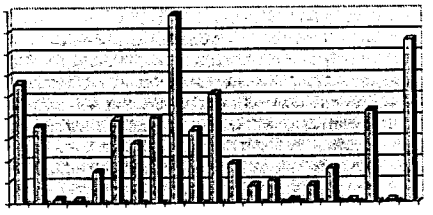
Estimate a Statistically Valid Compliance Rate

The observed compliance rate with the minor source emission limits is 100% for the sources audited.

The estimated compliance rate for all sources in the General Permit program is between 85% and 100% at the 90% confidence level.

Root Cause: actual emissions are usually well below a facility's potential to emit (PTE) and the minor source limits.

Figure 2. Actual Emissions as a Percentage of Minor Source Emission Limits



Observations on Emission Estimates

- Only one facility used source-specific stack test data to estimate emissions.
- Other facilities rely on published emission factors for fuel use or HAP or VOC content of materials.
- Some facilities used out-of-date emission factors; no effect on compliance rate.

Compliance With Record Keeping Requirements

- Only two facilities (9.5%) kept all the records required by the permit.
- Observed compliance rates with the records specified by the permit were 33% to 90%, depending on the record type.
- The estimated rate for all sources is ± 15% of the observed rate at the 90% confidence level.
- All facilities kept the records actually needed to estimate emissions.

Root Causes of Non-compliance

- Some records, especially operating hours, were not needed to estimate emissions.
- Operating hours were recorded for all equipment at seven facilities:
  Other facilities had equipment for which hours are not needed to estimate emissions.
- Material throughput recorded for all sources at 19 facilities:
  Two facilities had "negligible sources" vented to building interiors.

Root Causes of Non-compliance

- Emission rates estimated and recorded monthly at ten facilities:

  Others performed monthly emission estimates every quarter or annually.

  One facility (vapor degreaser) only had occasional material inputs to the process; estimated emissions annually.

Root Causes of Non-compliance

- Annual emissions estimated on a 12-month basis for all sources at 18 facilities:

  Two facilities had "negligible" sources for which emissions were not estimated.

  One facility had a vapor degreaser for which emissions were estimated only for the calendar year.

Possible Improvements to the Program

Remove Unnecessary Recording Requirements
Some parameters are not needed to estimate emissions, e.g., operating hours.

Determining Potential to Emit
Can PTE calculations better reflect actual operating conditions of "very small" businesses?

Permit Engineer Oversight
A second opinion from a supervising engineer, at the request of a facility, could avoid having to use a formal appeals process.

Possible Improvements to the Program

Plain-English Guidance

"We don't want to be experts in clean air regulations or general permit requirements, we just want to comply."

On-line Resources and Reporting

Electronic versions of forms and electronic reporting

Example calculation spreadsheets

An e-mail list server to notify sources of updates and deadlines.

More Guidance on Treatment of Negligible Sources

Sources vented to the inside of buildings not treated consistently in emission unit inventories and calculations.